

Notice of Allowability

Application No.

10/697,474

Examiner

Barbara Summons

Applicant(s)

NISHIMURA ET AL.

Art Unit

2817

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the preliminary amendment of 10/30/03.
2. ☒ The allowed claim(s) is/are 1-3.
3. ☒ The drawings filed on 30 October 2003 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 10/30/03
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

REASONS FOR ALLOWANCE

1. The following is an examiner's statement of reasons for allowance: wing is an examiner's statement of reasons for allowance:

The prior art of record does not disclose or fairly suggest a band-pass ladder filter having terminal impedances of Z_0 , wherein the filter is formed with film bulk acoustic resonator elements, and wherein the "characteristic impedance of any one of the series elements is Z_1 " and the "characteristic impedance of any one of the shunt elements is Z_2 " and the recited relationships between Z_0 , Z_1 and Z_2 hold. The following thorough discussion of the reference to Bradley et al., considered to be the closest prior art, should also be noted.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

2. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Bradley et al. U.S. 6,262,637 discloses a duplexer comprised of two band-pass ladder filters formed with film bulk acoustic resonators (FBARs)[see Fig. 6]. Bradley et al. also discloses that in the receive filter 204, in order to match the input/output terminal characteristic impedance of 50 Ohms, the shunt resonators 227 and 221 adjacent the input/output terminals are "smaller in size than the shunt FBARs

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223 and 225" (see col. 13, lines 29-35). Because the size of the resonators determines their individual characteristic impedances, it would appear that the two larger resonators 223 and 225 have a larger characteristic impedance than the two smaller resonators, as can be determined from the known equations on page 4 lines 7-8 of Applicants' spec. (see also Applicants' Table 1 which shows the shunt resonator with the larger area has the smaller characteristic impedance of 35 Ohms). However, not enough information about the materials, and thicknesses thereof, of the resonators in Bradley et al. is known to calculate the characteristic impedances and to evaluate the relation of the characteristic impedance of the shunt resonators Z_2 to the terminal impedance Z_0 . For example, it may be that the larger shunt resonators 223 and 225 have a 50 Ohm characteristic impedance while the two smaller shunt resonators have a characteristic impedance of greater than 50 Ohms, which would be the claimed requirement for the series resonators and not the shunt resonators. Furthermore, Bradley et al. does not disclose the characteristic impedances of the series resonators and so does not show any one of the series resonators having a characteristic impedance that is different from the other resonators which would be assumed to be different from 50 Ohms.

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barbara Summons whose telephone number is (571) 272-1771. The examiner can normally be reached on M-Th, M-Fr.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bob Pascal can be reached on (571) 271-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

bs
December 21, 2004

A handwritten signature in cursive script that reads "Barbara Summons". The signature is written in black ink and extends across the width of the block.

**BARBARA SUMMONS
PRIMARY EXAMINER**